File Code: 2580

Date:

Ms. Debra Wolfe
Montana Department of Environmental Quality
P.O. Box 200901
Helena, Montana 59620-0901

Dear Ms. Wolfe:

The USDA Forest Service (FS) would like to provide the following comments on the Draft CALPUFF BART Modeling Protocol for Mandatory Class I Areas, dated March 15, 2006. I am also enclosing a copy of the Federal Land Managers (FLM) *General Recommendations of Particle Speciation for Class I Visibility Analyses* (see Comment #9 below). Specific comments are listed below:

1. Page 3. From the map showing the modeling domain, it is unclear whether or not the CALPUFF domain extends at least 50 km east of the Class I areas in western North Dakota (Theodore Roosevelt National Memorial Park and Lostwood Wilderness). The eastern edge of the modeling domain should extend at least 50 km beyond all Class I areas being modeled.

2. Page 5 & Page 6. The protocol suggests that each subject-to-BART source will be modeled "on an individual pollutant basis". The FS does not recommend an individual pollutant modeling approach. Visibility impacts are the composite effect of all emissions and individually modeling each pollutant is not likely to provide a realistic assessment of visibility impacts. All BART modeling needs to include a complete inventory of visibility-reducing emissions for each source.

3. Page 6. The protocol references an opportunity for site-specific deviations from the standard BART modeling protocol. The FS requests an opportunity be provided to submit comments on any deviations that may be proposed to the approved BART modeling protocol for a specific source.

4. Page 7. The FS requests that we be notified whenever any new CALPUFF information is posted to the MDEQ CALPUFF visibility website.

5. Page 13. The protocol discusses a "nested 1 km grid" for CALPUFF modeling of Columbia Falls Aluminum because of the short travel distance from this particular source to certain Class I areas. The FS approves using a smaller modeling grid where the Class I areas is less than 50 km from a particular emission source. However, our understanding of the CALPUFF system is that a separate modeling domain and separate CALPUFF runs

will probably be needed for the 1 km modeling effort, as we are unaware of any CALPUFF feature that allows input of "nested grids".

6. Page 22 and Page 42. The vertical cell face heights (ZFACE) should be the same in each modeling year (this comment applies to both CALMET and CALPUFF). The modeling needs to be consistent between modeling years and variability in cell face heights violates this premise and introduces potential inconsistencies in the year-to-year CALPUFF results.

7. Page 23. The TERRAD value (80 km) is outside of the normal FLM expectation. The FS recommends is that this value should represent the "peak to peak" wavelength between significant terrain features. In most cases, this recommended approach generates a TERRAD value in the range of 10-20 km.

8. Page 23-24: The protocol lists the same value (30 km) for RMAX1 and R1. R1 represents the "equal weight" distance for the influence of surface observational data, while RMAX1 represents the "maximum" distance for this influence. When R1 = RMAX1, the potential for discontinuities in the meteorological data fields exists as the observational data weighting immediately drops from 50% to 0% beyond the RMAX1 distance. The FS recommends increasing the RMAX1 value to approximately 30-50 km or decreasing the R1 value to approximately 20 km.

9. Page 27-28. The FLMs have developed recommendations for PM speciation at a number of emission units in additional to coal-fired boilers (see attached FLM guidance). The BART modeling should include PM speciation for these additional emission sources, where appropriate. For any gas-fired combustion source, the "filterable" PM should be assigned as organic carbon (OC) and the "condensable" PM should be assigned as either primary sulfate or secondary organic aerosol (SOA), depending on the level of the SO_2 emissions.

10. Page 37. The FS opinion is that two ozone stations (Glacier and Yellowstone National Parks) are inadequate to represent the background ozone levels across such a large modeling domain. The CALPUFF modeling should incorporate additional ozone monitoring stations in Montana and adjoining areas to the extent that such data are available. In the absence of any additional ozone monitoring stations, the CALPUFF modeling should employ a representative "monthly average" ozone background rather than spatially interpolating sparse data across hundreds of kilometers.

11. Page 42. The CALPUFF modeling file listed 11 vertical layers (NZ), while the CALMET modeling file listed 10 vertical layers. The number of vertical layers should be consistent in the CALMET and CALPUFF modeling.

12. Page 50-51. Please confirm whether or not the "background" visibility condition used to assess potential visibility impairment will be based on the "best 20 percent visibility days". Although this approach appears to be MDEQ's intent, the protocol also refers to using "natural background" for the visibility calculations. Some persons may be confused by this term as "natural background" may also refer to the presumed "natural" conditions

referenced in the recommended FLAG modeling guidelines used for New Source Review (NSR). The "natural background" in the FLAG NSR modeling recommendations is not necessarily the same as the "natural background" referenced in EPA's 2003 guidance.

13. Page 9-12. MDEQ proposes to apply the newly developed IMPROVE haze equation which was approved by the IMPROVE steering committee in December 2005. The new equation is ONLY for better proportioning the captured particulate mass on the IMPROVE filters and NOT for use in CALPUFF. The methodology for calculating visibility impacts with CALPOST should be consistent with the IWAQM Phase 2 report

14. Page 40. MDEQ proposes to use the puff splitting option in the CALPUFF model. The FS cautions MDEQ that they should apply this option sparingly, as it will greatly increase computer processing time. The FS recommends that this option not be used unless the distance from the source to the Class I area is greater than 300 kilometers.

15. Page 43 and Appendix C: MDEQ proposes to create a relative humidity file from CALPUFF/CALMET. This is not necessary as the EPA Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule (September 2003) recommends that the Monthly Site-Specific f(RH) Values for each Mandatory Federal Class I Area, Based on the Representative IMPROVE Site Location (Table A-2) be applied in CALPOST. The monthly site specific f(RH) in the MDEQ BART protocol's Appendix C are from (Table A-3) in the EPA Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule. These are supplemental information and are not the EPA preferred f(RH) monthly values. MDEQ should apply the f(RH) values from (Table A-2) from the EPA haze guidance document.

Should you have any questions regarding these comments, please do not hesitate to contact me at (406) 329-3672, or by e-mail at tdzomba@fs.fed.us. Again, thank you for the opportunity to provide comments on this protocol.

Sincerely,

/s/ Thomas C. Dzomba
THOMAS C. DZOMBA, MSPH
Assistant Director, Air Quality and Smoke Management

Enclosure

Cc: John Bunyak, National Park Service